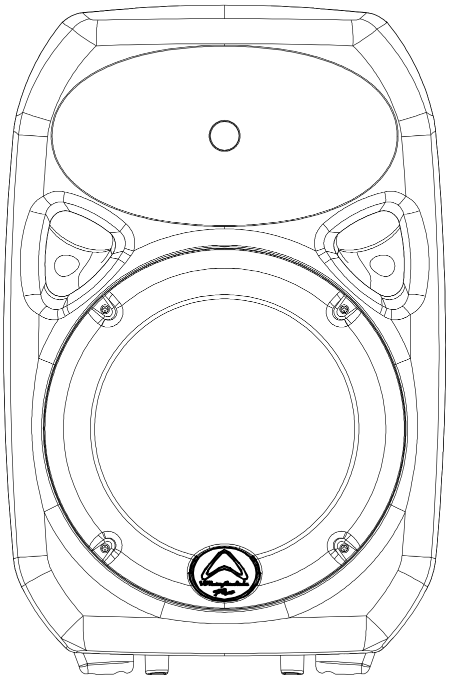
Wharfedale Professional

Service Manual

TITAN 12D



www.wharfedalepro.com

Rev	Date	Update Content
V01	2011.04.01	First Release

CONTENT

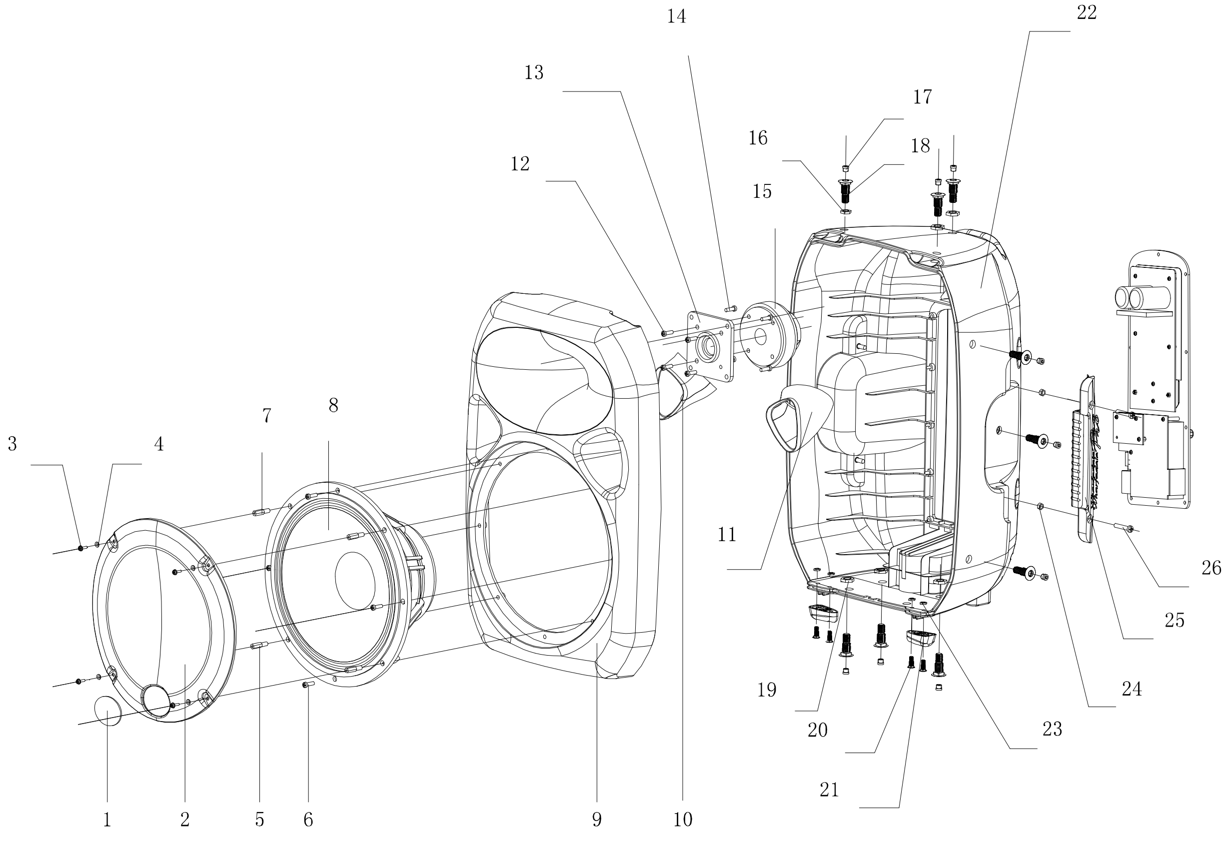
It is the responsibility of the user to ensure that all the information contained in this manual is current. Notification for new issues of this manual and minor updates will be given via the IAG web-site or on request.

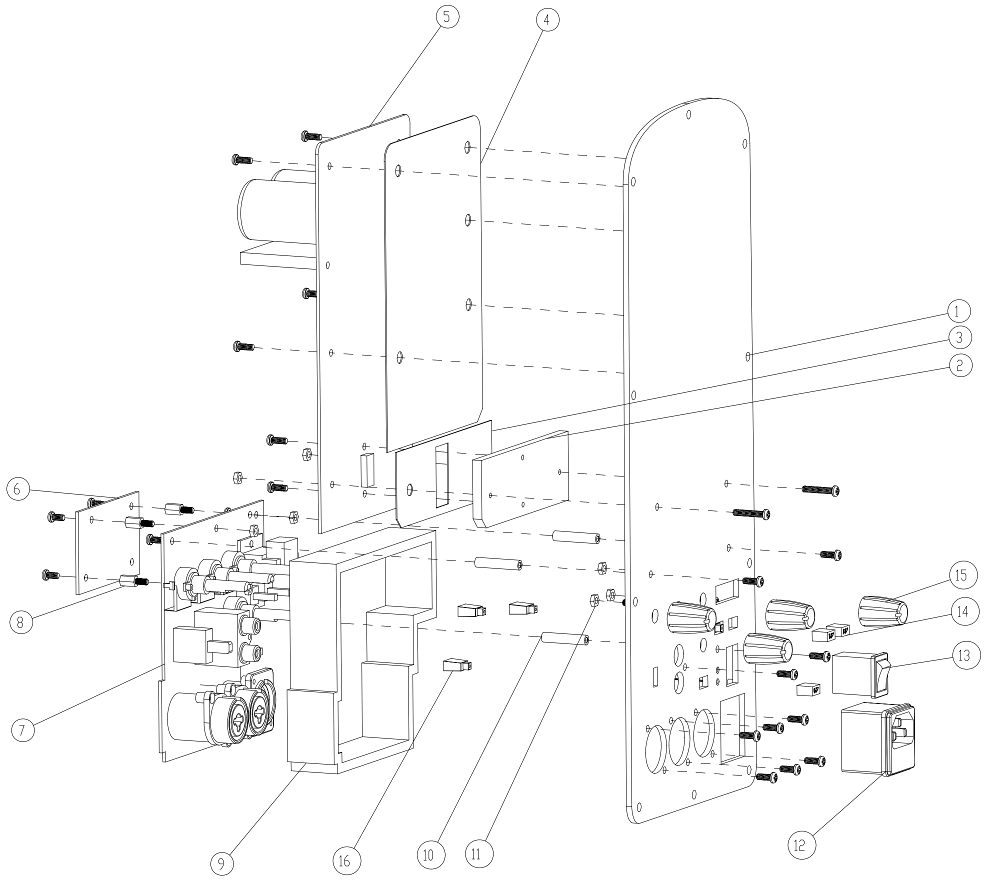
This manual has been prepared with the greatest care, it is intended for information only and no liability shall be accepted for errors or changes to specification.

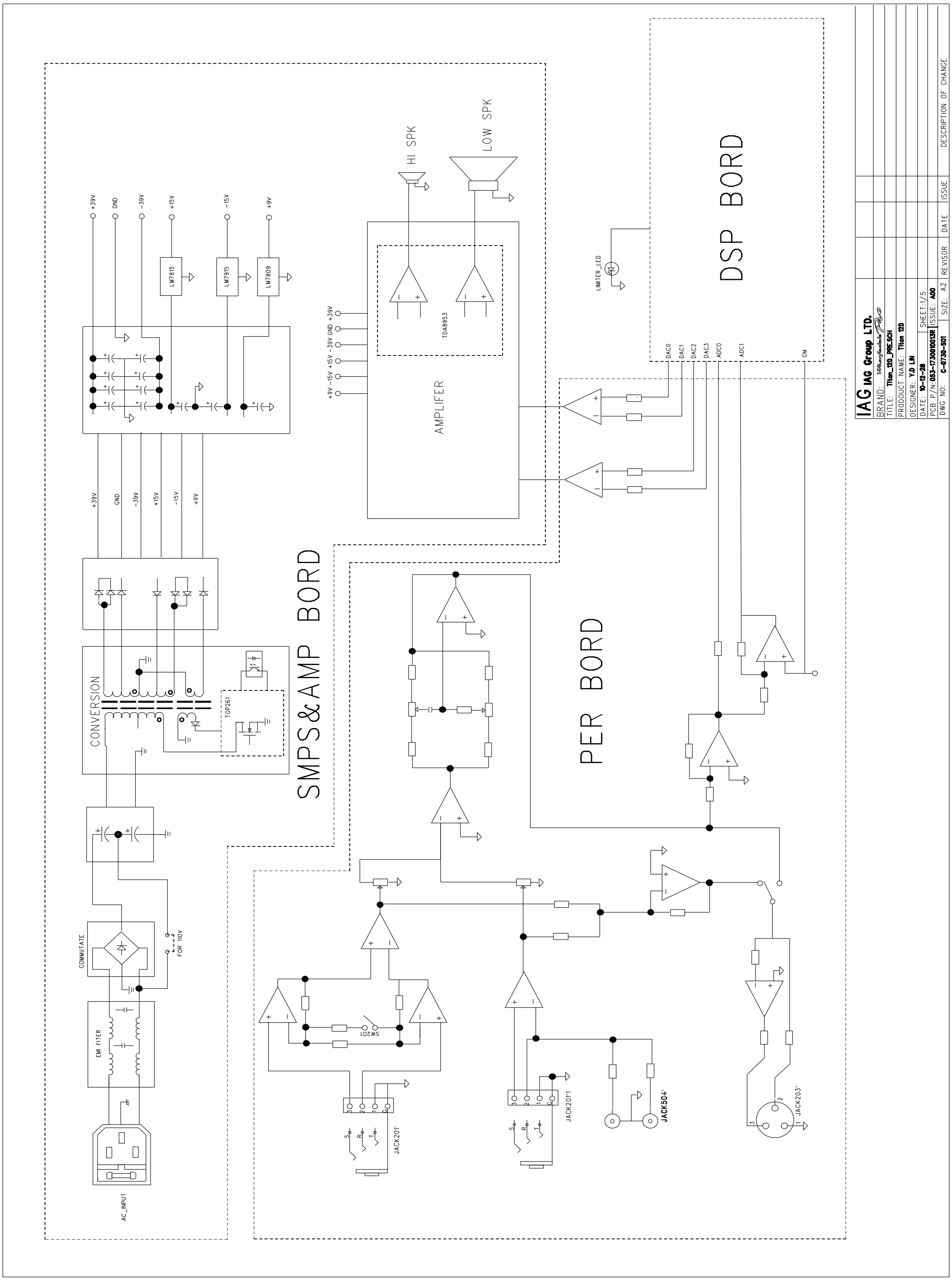
For further service information, parts lists and updates, please contact our web-site at www.international audio group.com .

System Type	Active 12” 2-way Bi-Amplified system
Frequency Response (+/-3dB)	55-20kHz
Low Frequency Transducer	
Size (mm / inches)	305mm / 12”
Coil Size (mm / inches)	64.26mm / 2.5”
Impedance	4 Ω
High Frequency Transducer	
Type	Compression Driver
Coil Size (mm / inches)	51mm / 2”
Exit Size (mm / inches)	25mm / 1”
Diaphragm Material	Titanium
Impedance	8 Ω
High Frequency Coverage (H x V)	90° x 60°
Amplifiers	
Low-Frequency Power Amplifier (Class D)	170W (@1% THD 4Ω) 200W (@ 10% THD 4Ω) 354W(@Peak power4Ω)
High- Frequency Power Amplifier (Class D)	48W (@1% THD 8Ω) 58W(@10% THD8Ω) 172W (@Peak power 8Ω)
Electronic Crossover:	
Crossover Frequency	HI PASS 2.5KHz LOW PASS 2.5KHz
Controls	
Equalization:	bass gain +/-10dBv treble gain +/-10dBv
Bass Response Optimizer ("BRO”™) circuit	+6dBv @ 60Hz
Subsonic Filter	30Hz
Amplifier Protection	YES
Power On Protection	YES
Thermal Protection	YES
Low Line Voltage Shut Down	YES
Driver Protection	YES
DC Protection	YES
Short Protection	YES
Clip Limiter:	YES
Limiter Indicator	LED
Power Indicator	LED
Inputs	Balanced XRL and unbalanced RAC
Input A – type	Switchable balanced mic or line level input
Input Sensitivity	Mic: -36dBu (-38.2dBv or 12.28mVrms) Line: +4dBu (1.78dBv or 1.228Vrms)
Maximum Input Level	+22dBu

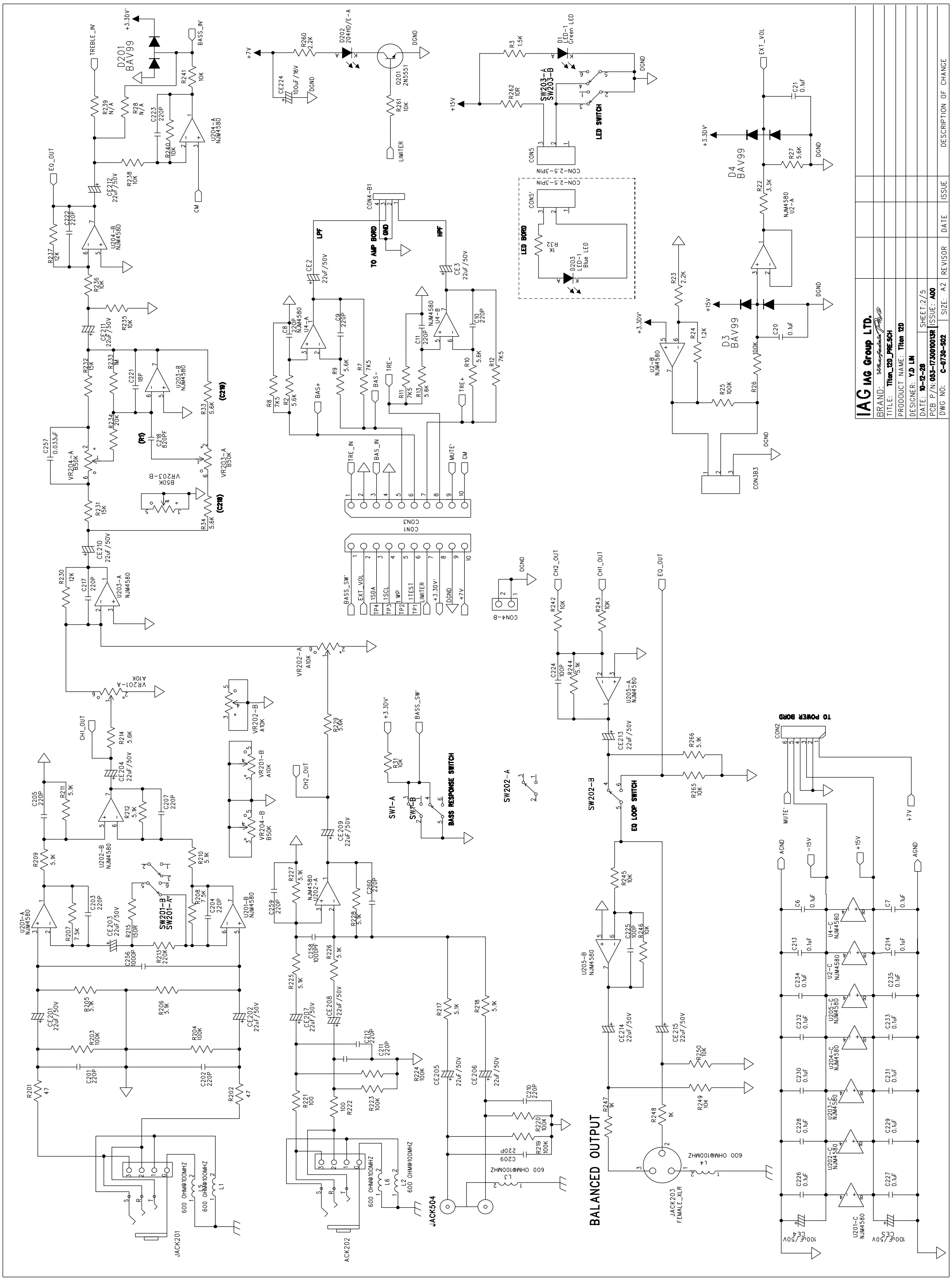
Input Connector	XLR - 1/4” Combo jack
Input Impedance	Balanced: 20k ohms Unbalanced:10k ohms
Maximum Input Level	+22dBu
Input B – type	Line level input
Input Sensitivity	XLR - 1/4” Combo jack: 1.78dBv or 1.228Vrms RCA: 0dBu (-2.2dBv or 0.775Vrms)
Maximum Input Level	+22dBu
Input Connectors	Combo jack: 1/4" - XLR / Summed dual RCA jacks
Line Output	XLR
Line Output Connector	Switchable LOOP / MIX Balanced Male XLR
Impedance Balanced:	Balanced: 1k ohm Unbalanced: 500 ohM
Sensitivity	+4dBu(1.78dBv or 1.228Vrms)
AC Power details	
Power Supply	100V-120V/220V-240V50Hz/60Hz
AC Power Options	
Power On Indicator	LED
Rigging / Bracket / Mounting Options	10 M8 threaded inserts including 4 M8 threaded inserts on bottom in OmniMount 60.0-type footprint Pole-mount receptacle with lock screw 2 carry handles (one on each side) Optional wall-mount bracket
Enclosure	
Enclosure Material	Injection Moulded Polypropylene
Colour	Black or white
Dimensions (mm / inches):	
H	556mm / 21.88”
W	384mm / 15.11”
D	312mm / 12.28”
Weight	
Net Weight (kg / lbs)	12.4kg / 27.28lbs
Gross Weight (kg / lbs)	15.5kg / 34.1lbs

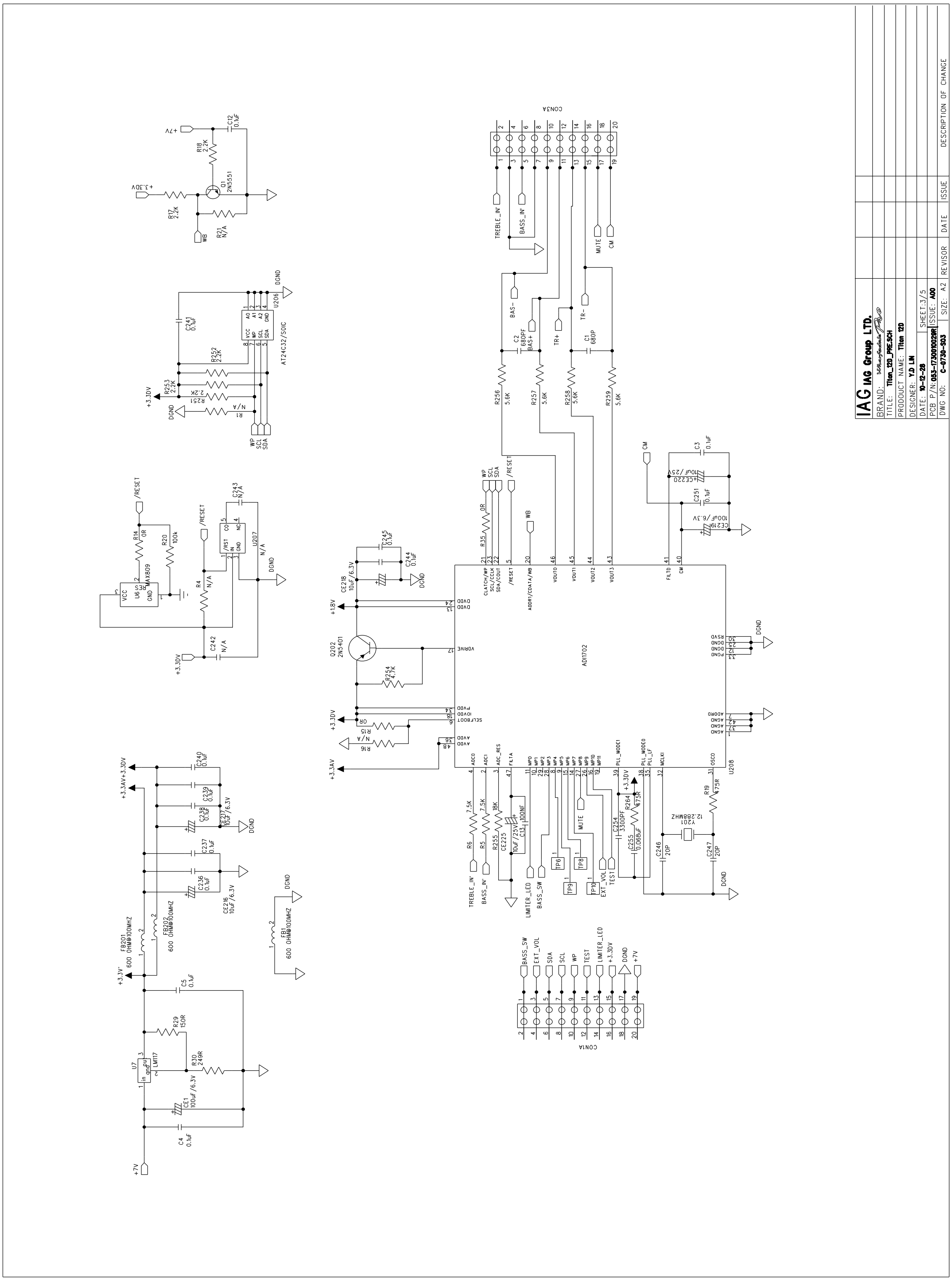

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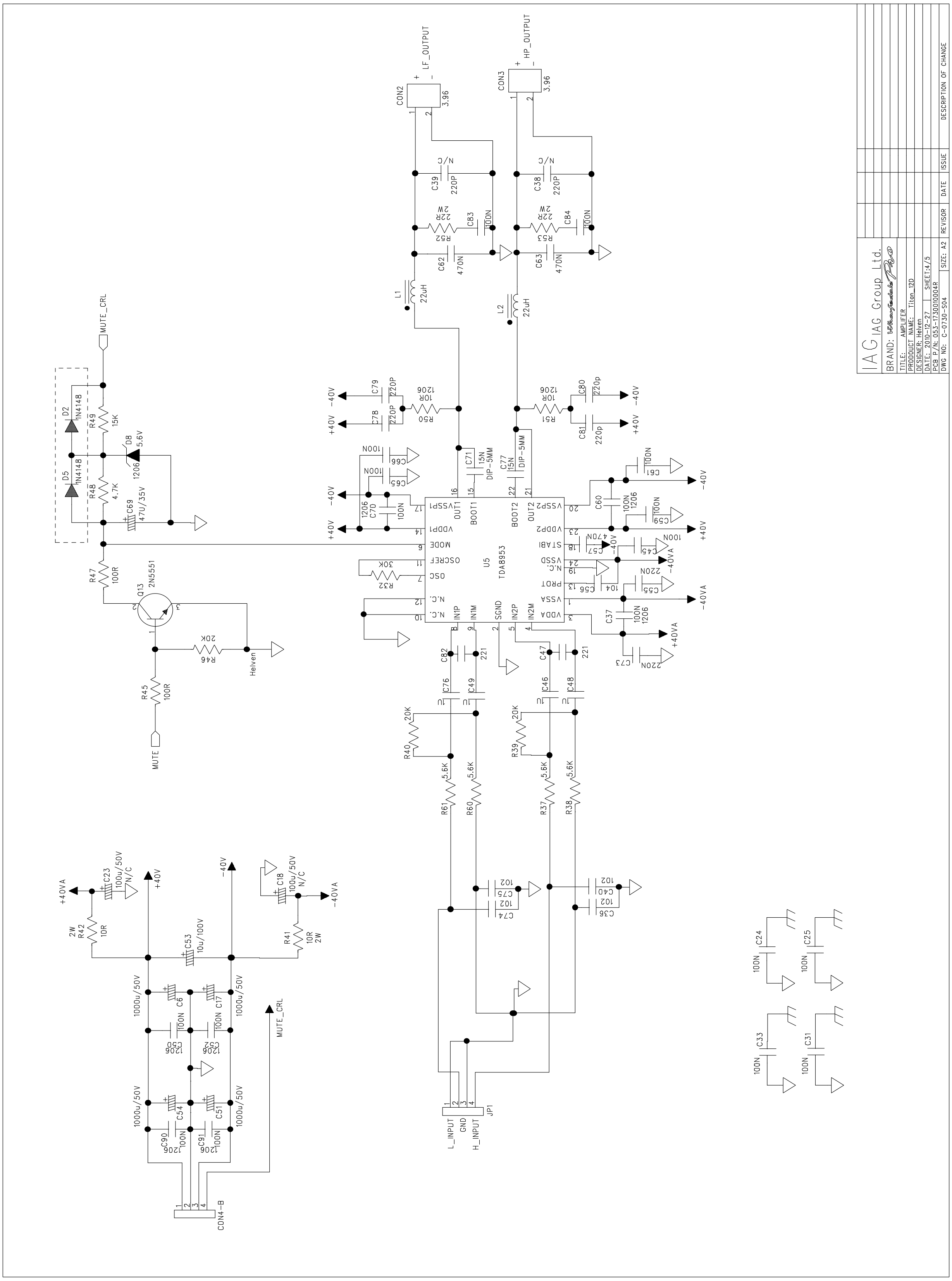

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DSP BORD
SMPS&AMP BORD
PER BORD
AMPLIFER
CONVERSION
HI SPK
LOW SPK
TDA8953
LM7815
LM7915
LM7809
TOP261
EMI FITER
COMMUTATE
AC_INPUT
FOR 110V
LIMITER_LED
DAC0
DAC1
DAC2
DAC3
ADC0
ADC1
CM
+39V
GND
-39V
+15V
-15V
+9V
SW201
JACK201'
JACK201'1
JACK504'
JACK203'
IAG Group LTD.
DESCRIPTION OF CHANGE
ISSUE
DATE
REVISOR

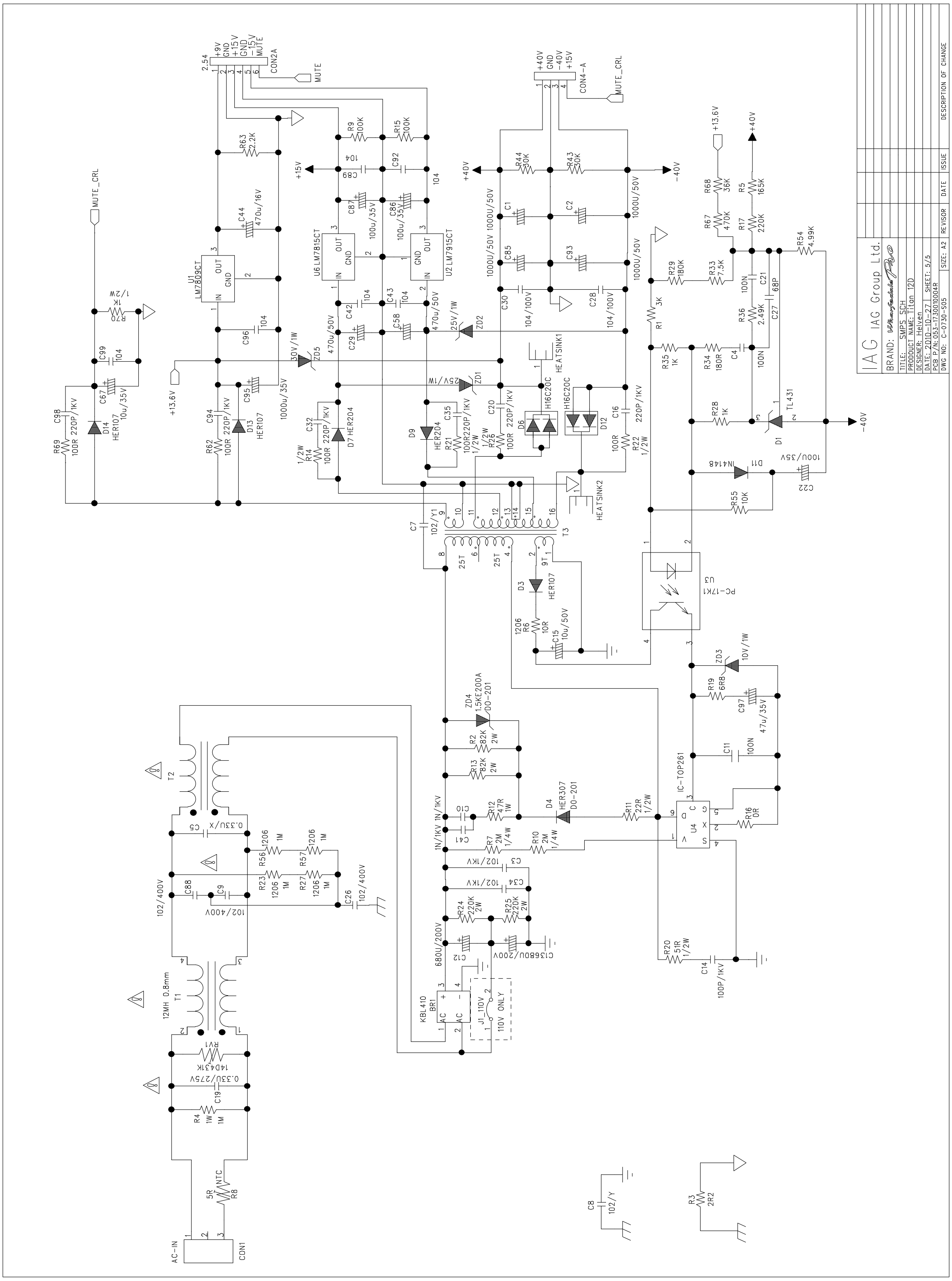
SCHEMATIC DIAGRAM

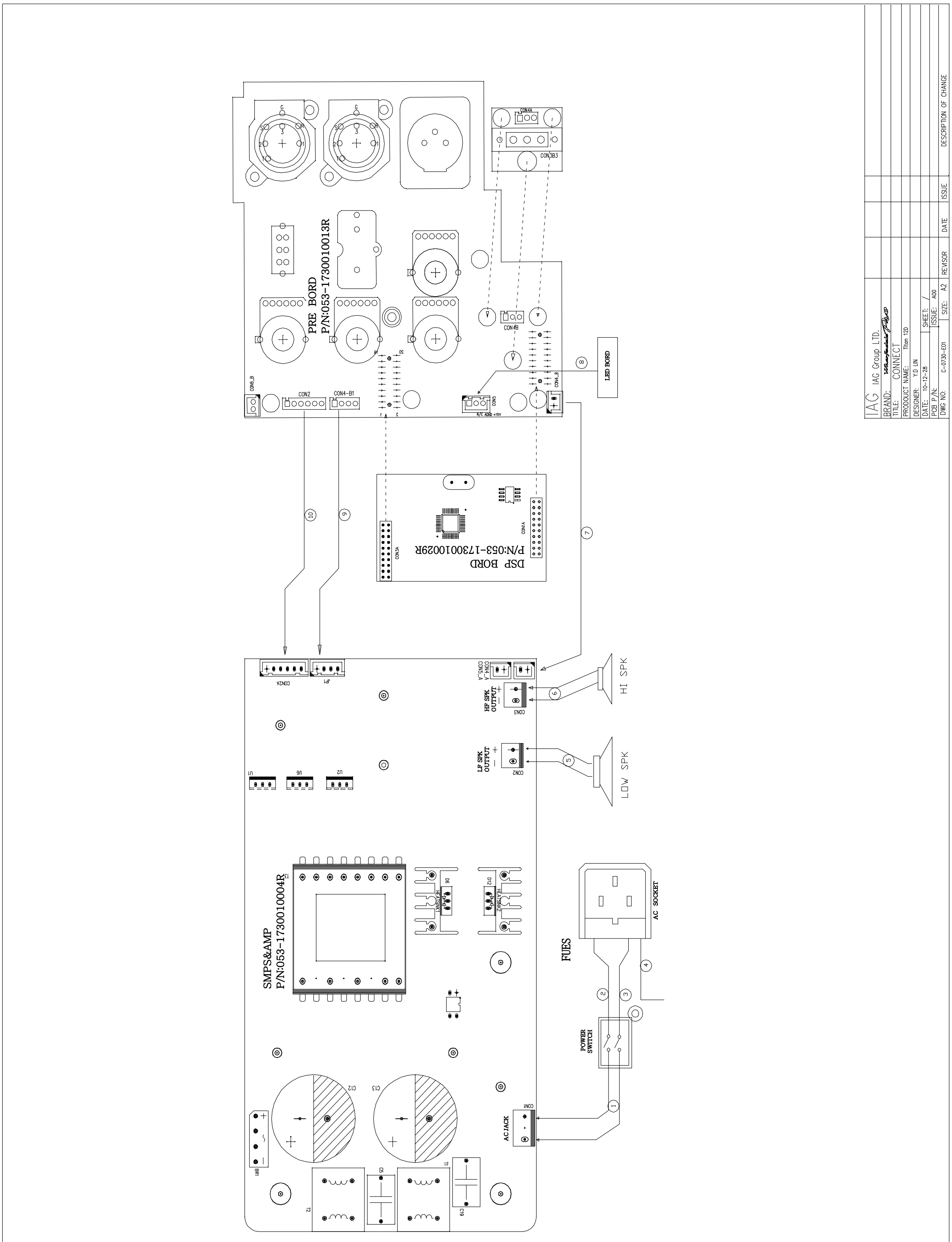


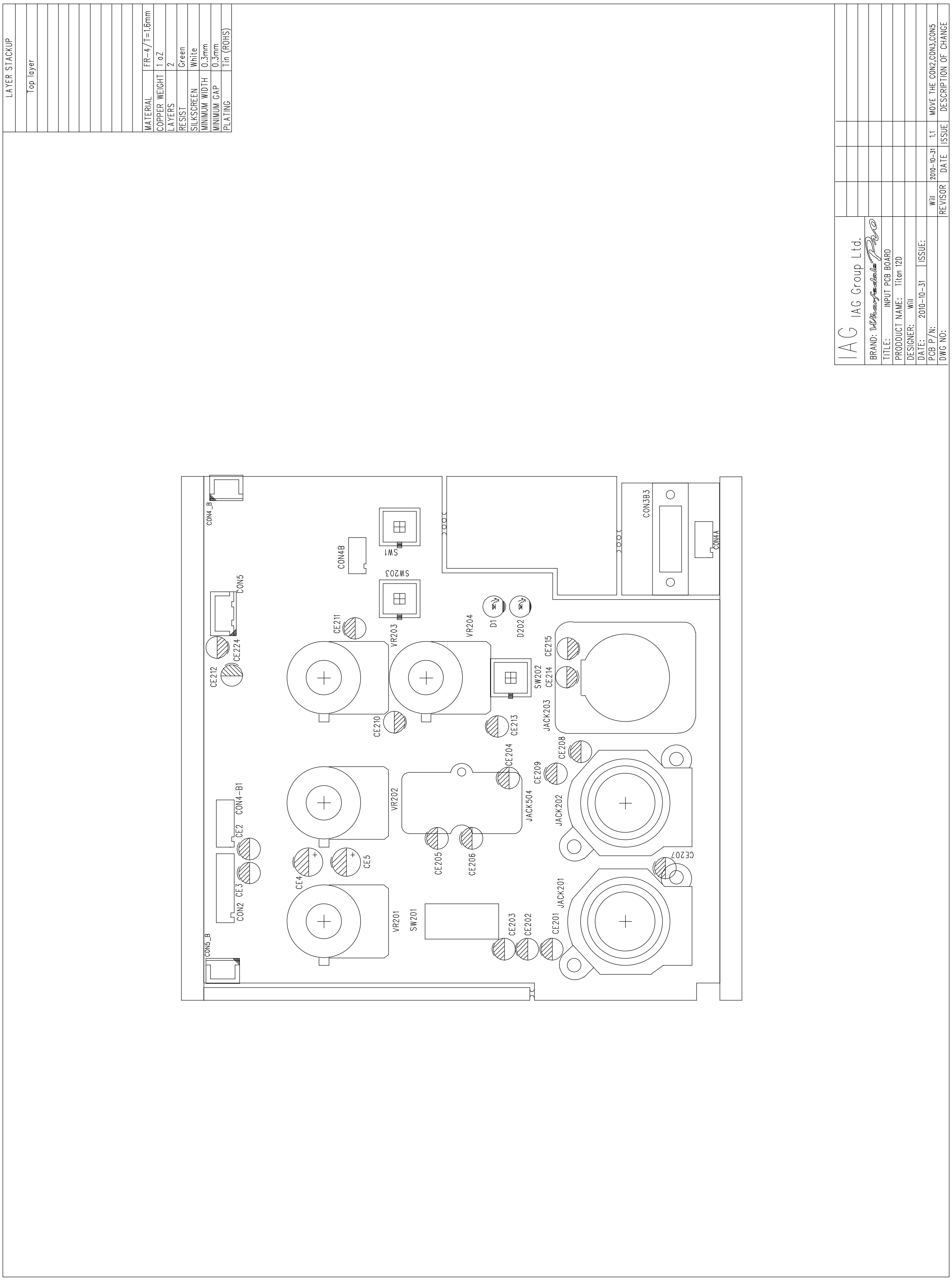

IAG Group LTD.
DESCRIPTION OF CHANGE
ISSUE
DATE
REVISOR
AD1702
U208
AT24C32/SOIC
MAX809
LM1117
2N5401
2N5551
CON3A
CON1A

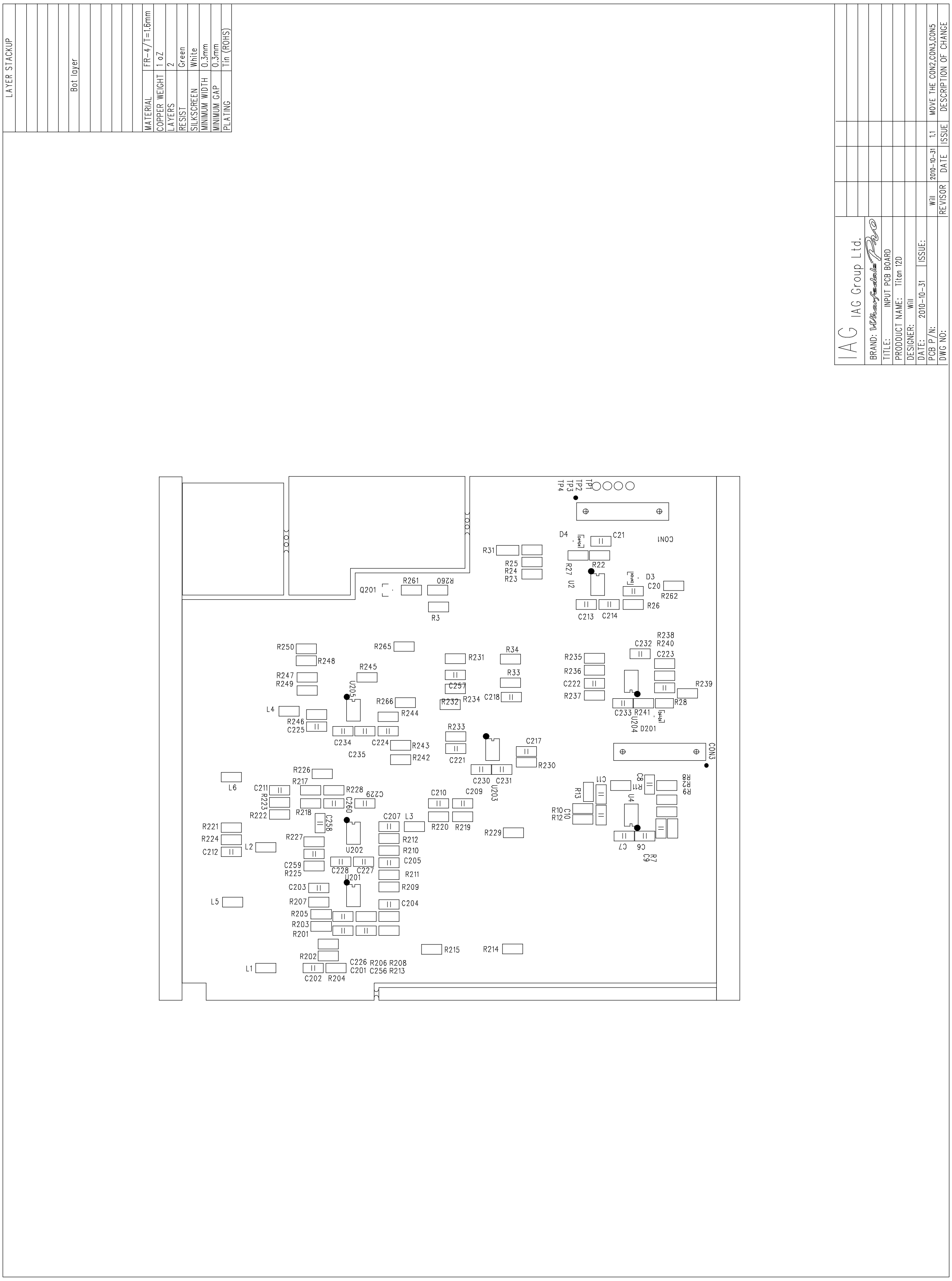


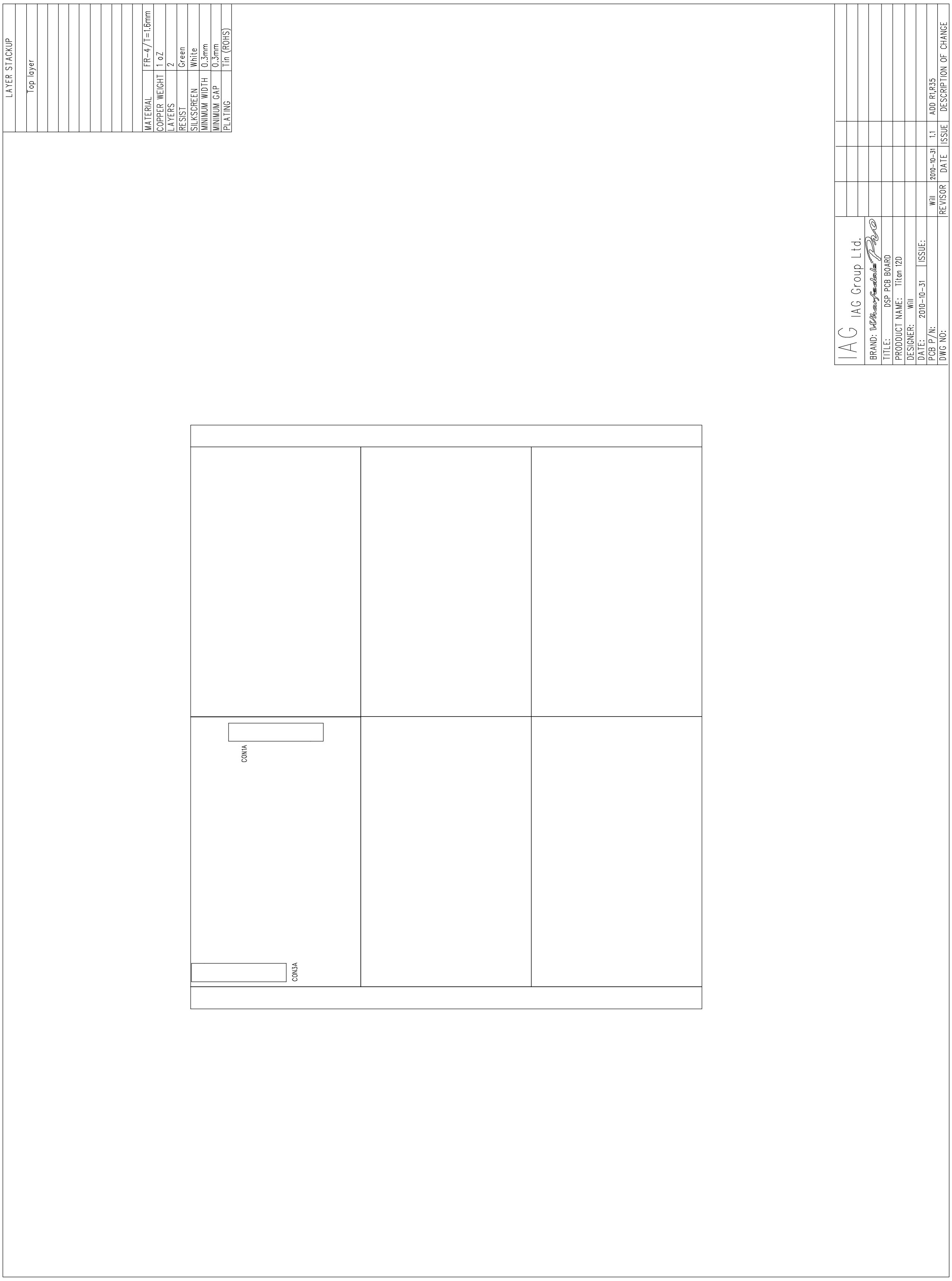
LF_OUTPUT
HP_OUTPUT
CON2
CON3
MUTE_CRL
MUTE
TDA8953
U5
2N5551
Q13
JP1
L_INPUT
GND
H_INPUT
CON4-B
IAG Group Ltd.
DESCRIPTION OF CHANGE



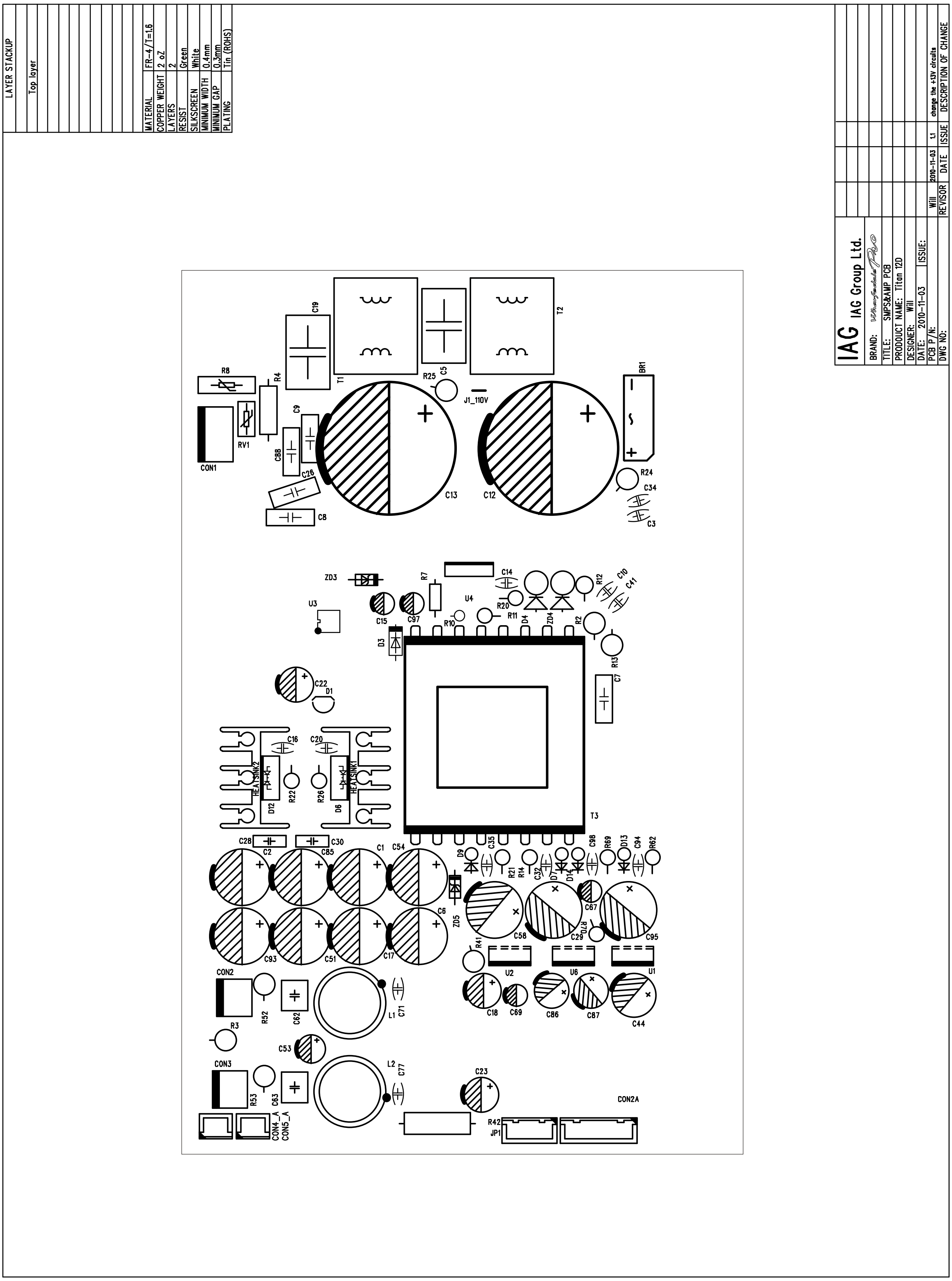

PRE BORD
P/N:053-1730010013R
DSP BORD
P/N:053-1730010029R
SMPS&AMP
P/N:053-1730010004R
LED BORD
HI SPK
LOW SPK
AC SOCKET
FUES
POWER SWITCH
AC JACK
HF SPK OUTPUT
LF SPK OUTPUT

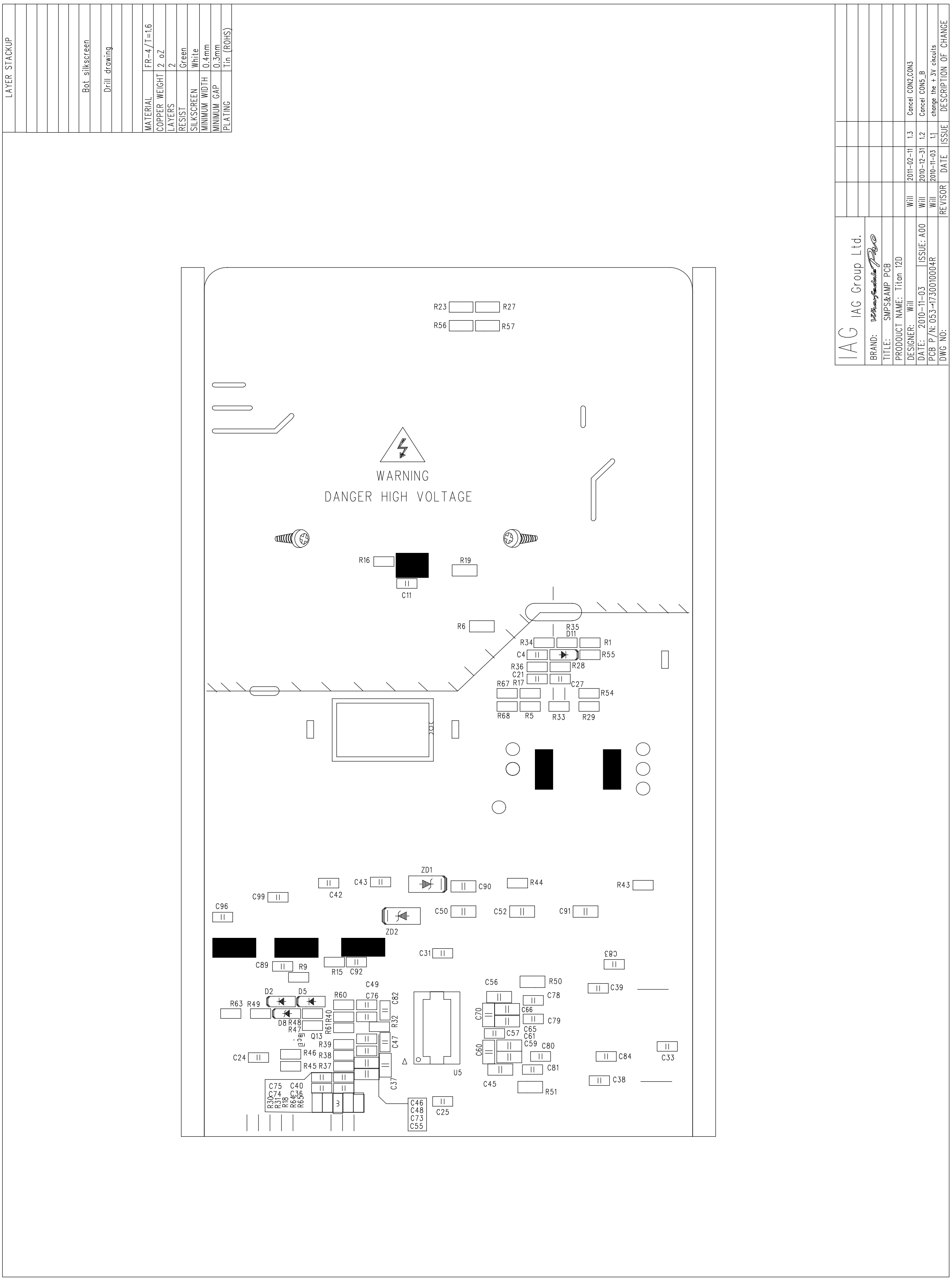

LAYER STACKUP
Top layer
MATERIAL FR-4/T=1.6mm
COPPER WEIGHT 1 oZ
LAYERS 2
RESIST Green
SILKSCREEN White
MINIMUM WIDTH 0.3mm
MINIMUM GAP 0.3mm
PLATING Tin (ROHS)
IAG IAG Group Ltd.
TITLE: INPUT PCB BOARD
PRODOUCT NAME: Titan 12D
DESIGNER: Will
DATE: 2010-10-31
ISSUE:
PCB P/N:
DWG NO:
Will 2010-10-31 1.1 MOVE THE CON2,CON3,CON5
REVISOR DATE ISSUE DESCRIPTION OF CHANGE

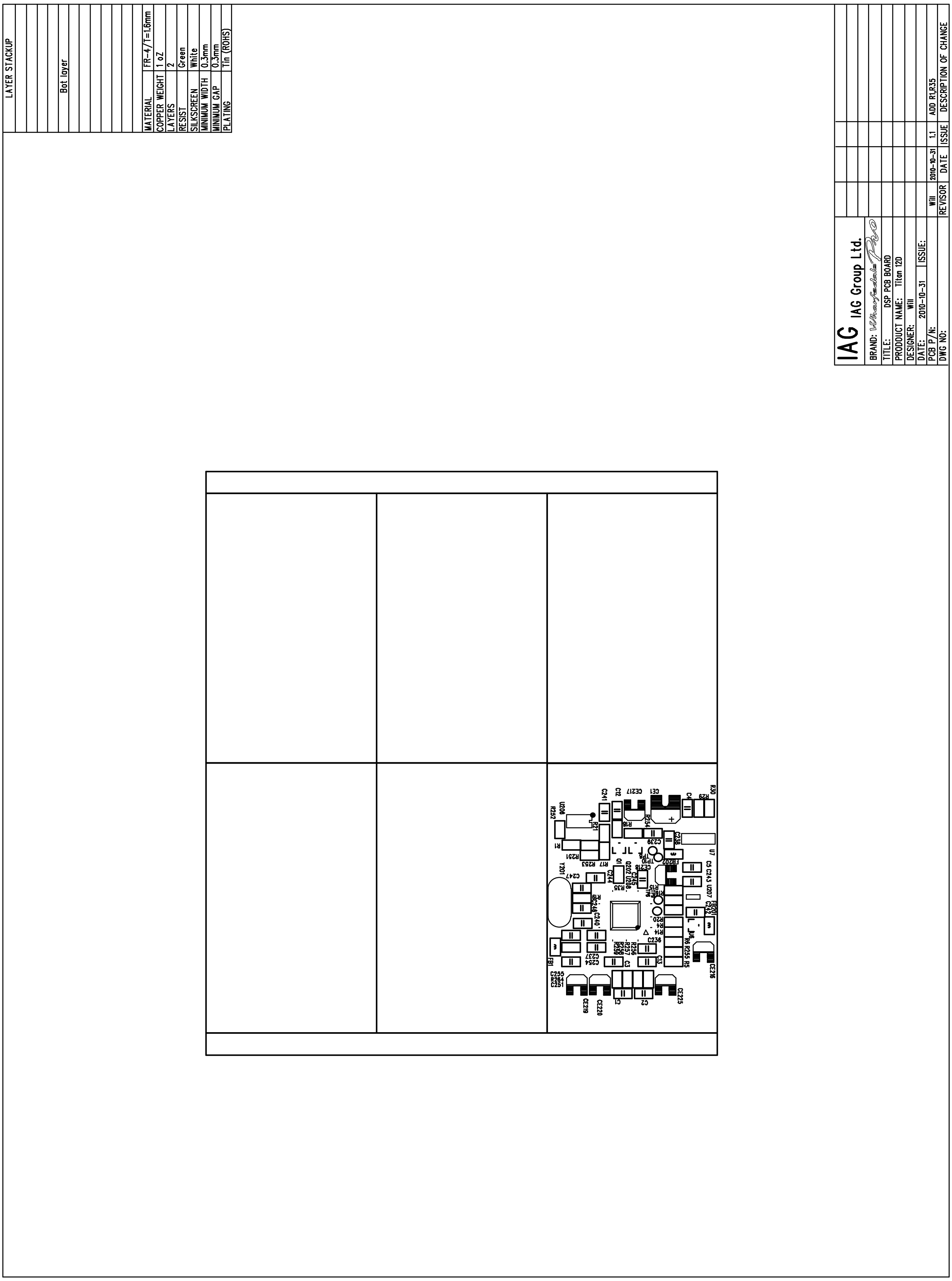



LAYER STACKUP
Top layer
MATERIAL FR-4/T=1.6mm
COPPER WEIGHT 1 oZ
LAYERS 2
RESIST Green
SILKSCREEN White
MINIMUM WIDTH 0.3mm
MINIMUM GAP 0.3mm
PLATING Tin (ROHS)
Will 2010-10-31 1.1 ADD R1,R35
REVISOR DATE ISSUE DESCRIPTION OF CHANGE
IAG IAG Group Ltd.
BRAND:
TITLE: DSP PCB BOARD
PRODOUCT NAME: Titan 12D
DESIGNER: Will
DATE: 2010-10-31 ISSUE:
PCB P/N:
DWG NO:
CON1A
CON3A

SILKSCREEN OF TOP / BOTTOM




LAYER STACKUP
Bot silkscreen
Drill drawing
MATERIAL FR-4/T=1.6
COPPER WEIGHT 2 oZ
LAYERS 2
RESIST Green
SILKSCREEN White
MINIMUM WIDTH 0.4mm
MINIMUM GAP 0.3mm
PLATING Tin (ROHS)
IAG IAG Group Ltd.
BRAND:
TITLE: SMPS&AMP PCB
PRODOUCT NAME: Titan 12D
DESIGNER: Will
DATE: 2010-11-03
ISSUE: A00
PCB P/N: 053-1730010004R
DWG NO:
Will 2011-02-11 1.3 Cancel CON2,CON3
Will 2010-12-31 1.2 Cancel CON5_B
Will 2010-11-03 1.1 change the + 3V ckcuits
REVISOR DATE ISSUE DESCRIPTION OF CHANGE
WARNING
DANGER HIGH VOLTAGE


LAYER STACKUP
Bot layer
MATERIAL FR-4/T=1.6mm
COPPER WEIGHT 1 oZ
LAYERS 2
RESIST Green
SILKSCREEN White
MINIMUM WIDTH 0.3mm
MINIMUM GAP 0.3mm
PLATING Tin (ROHS)
IAG IAG Group Ltd.
BRAND: Wharfedale Pro
TITLE: DSP PCB BOARD
PRODOUCT NAME: Titan 12D
DESIGNER: Will
DATE: 2010-10-31
ISSUE:
PCB P/N:
DWG NO:
Will 2010-10-31 1.1 ADD R1,R35
REVISOR DATE ISSUE DESCRIPTION OF CHANGE

1. INPUT SENSITIVE TEST

A：High Section

Input 12K Hz 775mV Sine Wave Volume Max Output between 15 and 18V.

Ｂ：Low Section

Input 200Hz 775mV Sine Wave Volume Max Output between 25 and 28V.

2. SINGNAL/NOISE RATIO TEST

No single input, EQ Mid, Volume Max, Output single of HP&LP should below 1mV.

3. T.H.D TEST

Input Sin Wave, EQ: Mid, Level:Max,High:12KHz Load=8Ω, Low:60Hz Load=4Ω.

When the output is 1W and 10W, THD should below 0.1%.

4. Channel Equalization TEST

Test Condition

Input Sin Wave, EQ: Mid, Level: Max.

High:12KHz, Low:60Hz, Main Ouptu"-10dBu".

Tone Control	High		LOW	
	Cut	Boot	Cut	Boot
	-12dB	+12dB	-12dB	+12dB

5. High& Low Limiter Test

Input Sin Wave, EQ: Mid, Level: Max, when input≧775mV,red light is on.

R/N	P/N	PART NAME	DESCRIPTION	QTY
1	313-2104900001R	LOGO		1
2	310-2010470001R	Grille		1
3	537-4001080801AR	Screw	MP(+)4*8	4
4	513-4012130800AR	Nut	M4 4*12*1.3	4
5	565-0413100001R	Cooper of Pillar	M5*13,M4*14*30	2
6	537-5001150801AR	Screw	M5-15	4
7	565-0413100002R	Cooper of Pillar	M5*13,M4*12*27.5	2
8	ZD-70301-01R	Woofer	D-703A	1
9	200-2104702003R	Front Frame		1
10	232-2104702002R	Lift Port		1
11	232-2104702001R	Right Port		1
12	537-6001100801AR	Screw	MP(+)6*10	4
13	249-2010490001R	Contiguous Block	96*96*6MM	1
14	559-5001300071R	Screw	M5*30	6
15	ZD-70100-01R	Tweeter		1
16	500-1200951100R	Nut	M12x9.5mm	10
17	274-0400900786R	Plug	M8*5*7.8*ö4*ö9	10
18	321-4201202286-1R	Nut	M12XM8X42MM	10
19	500-6080130000R	Spacer	H7*M5*12.5	8
20	537-5001250801AR	Screw	MP(+)5*25	4
21	231-2600275212R	Foot		2
22	201-2104702003R	Main Frame		1
23	500-5080400300AR	Nut	M5	4
24	500-6000084080AR	Nut	M6	4
25	243-2010470200R	Handle		2
26	539-6001350802AR	Screw	MC(-)6*35 D	4
27	409-2190800000R	Carton	K=K	1

1	300-1730680000R	AMP Panel	Titan12D,AL,Black Paint	1
2	306-1730680000R	Heat Sink	100*35*8.3mm AL	1
3	826-0311003950R	Insulation Piece	39*110*0.5mm UL	1
4	826-0515611050R	Insulation Piece	156*110*0.5mm UL	1
5	088-1730010401R	Titan 12D Power PCBA	Titan 12D POWER PCBA	1
6	088-1730012901R	Titan 12D DSP PCBA	Titan 12D DSP PCBA	1
7	088-1730011301R	Titan 12D Pre-signal Board PCBA	Titan 12D Pre-Signal Board PCBA	1
8	307-1300800141R	Standoff (M3 x 8)	M3*8,All Long14.5mm	3
9	261-1106119260R	Seal Foam	106.7*119.4*26mm EVA Two-sides Glue	1

R/N	P/N	PART NAME	DESCRIPTION	QTY
10	307-2300500241R	Standoff (M3 x 24)	C02810M	3
11	500-3050240300AR	Nut	M3 NI	3
12	044-2600000000R	Jack	Power RF-2004	1
13	042-1003005000R	Power Switch	RL3-421-G-2 BK/BK-P8	1
14	212-1252000001R	9X5 Button	C-252.05P	3
15	293-2010470001R	Knob	ABS	4
16	212-1252000003R	Button Connecter	C-252.07P	3

R/N	P/N	PART NAME	DESCRIPTION	QTY
1	088-1730010401R	PCBA	Power Amplifier Board PCBA	1
2	088-1730010400R	PCBA(SMT)	Power Amplifier Board(SMT)	1
3	053-1730010004R	PCB	Power Amplifier Board	1
4	007-1001002060R	Capacitor	100NF/50V 0805M	15
5	007-1002052060QR	Capacitor	SMD 1nF 50V 5% 0805	4
6	007-1004053090R	Capacitor	100NF 100V 5% 1206 X7R	13
7	007-1005062090R	Capacitor	1UF/25V 0805 5%	4
8	007-2204063060R	Capacitor	220nF 50V 10% 1206	2
9	007-2201052090R	Capacitor	CAP COG 220PF/100V 0805 5% ROHS	6
10	007-4704062070R	Capacitor	470NF/50V 0805 20%	1
11	067-3304749110R	Zener Diode	4749 24V 1W	2
12	007-6800052060R	Capacitor	68pF/50V 5% X7R 0805	1
13	002-1005033050R	Resistor	1206 1M0 1/8W 5%	4
14	002-2202032010R	Resistor	2.2K 1/8W 1% 0805	1
15	067-2204148110R	Diode	ST LL4148 SMD1206	3
16	002-4704032010R	Resistor	470KΩ 1% 1/10W 0805	1
17	002-3603032010R	Resistor	36KΩ 1/8W 1% 0805	1
18	002-6809033010R	Resistor	6R8 1206 1% 50V 1/8W	1
19	002-7502032010R	Resistor	7.5KΩ 1/8W 1% 0805	1
20	067-3300056110R	Voltage-regulator Diode	5.6V 1/2W 1206	1
21	017-1359000000R	IC	IC-TDA8953	1
22	018-2905551227R	Transistor	2N5551S SOT-23 KEC	1
23	002-1001022010R	Resistor	0805 100Ω 1/10W F	2
24	002-1003032010R	Resistor	10KΩ 1/8W 1% 0805	1
25	002-1000033050R	Resistor	1206 10R 1/8W 5%	3
26	002-1503032010R	Resistor	15K 1/8W 1% 0805	1
27	002-2003032010R	Resistor	20KΩ 1/8W 1% 0805	3
28	002-3003032010R	Resistor	30KΩ 1/8W 1% 0805	3
29	002-4702032010R	Resistor	4.7K 1/8W 1% 0805	3
30	002-5602032010R	Resistor	5.6KΩ 1/8W 1% 0805	4
31	002-0000032100R	Resistor	0R±5% 1/8W 0805	6
32	002-1801032010R	Resistor	180Ω 1/8W 1% 0805	1
33	002-1002032010R	Resistor	1K 1/8W 1% 0805	2
34	002-2492032010R	Resistor	0805 2.49K 1/8W 1%	1
35	002-2203032011R	Resistor	220K 1/8W 0805 1%	1
36	002-1654022010R	Resistor	0805 165K 1/10W 1%	1
37	002-1804032010R	Resistor	180K 1/8W 1% 0805	1
38	002-3002032010R	Resistor	0805 3K 1/8W ±1%	1
39	002-4992022010R	Resistor	0805 4.99K 1/10W F	1
40	001-2200107050R	Resistor	22Ω/1W J	2
41	001-1001306050R	Resistor	100R 1/2W 5%	6
42	001-1002106050R	Resistor	1K 1/2W J	1

R/N	P/N	PART NAME	DESCRIPTION	QTY
43	001-2200706050R	Resistor	22Ω、1/2W、5%	1
44	001-2006205010R	Resistor	2M0 1/4W 1%	2
45	001-0220107050R	Resistor	2.2Ω/1W J	1
46	001-4700307050R	Resistor	47Ω 1W J	1
47	001-5100206010R	Resistor	51R 1/2W 1%	1
48	001-8203208050R	Resistor	82K 2W 5%	2
49	001-1005107050R	Resistor	1M 1W 5%	1
50	001-2204308010R	Resistor	220K 2W 5%	2
51	001-1000308050R	Resistor	10Ω 2W J	2
52	067-3300431000R	Diode	TL431C(ZENER) TO-92	1
53	008-3304025005R	Capacitor	MKP334/275VAC 20%	2
54	008-1021300016R	Capacitor	102/1000V ±20%	4
55	026-8595003210R	Inductance	8.5UH 20% L=21MM	2
56	008-1021040005R	Y Capacitor	102PF 400V	4
57	008-3302004006R	Y Capacitor	Y1 332M±20% 400VAC	1
58	067-6600200015R	Diode	1.5KE200A	1
59	067-3304740000R	Zener Diode	1N4740A（1W 10V） FAIRCHILD	1
60	014-1530200002R	Capacitor	AMZ 15N-63V-5%	2
61	067-3379300000QR	Zener Diode	DIODE BZX79C 30V ZENER	1
62	016-4740810001R	Capacitor	0U47 10% 63V MKS2 WIMA PH5MM	2
63	008-2201050015R	Capacitor	220PF/500V	6
64	008-1001100004R	Capacitor	100PF/1000V	1
65	013-1040210801R	Capacitor	104/63V ?100V	2
66	006-1024133063R	Capacitor	1000U/50V	9
67	006-1017081263R	Capacitor	100uF/50V 20% Φ8*11.5 Low ESR RuBycon	2
68	006-1011081153R	Capacitor	SM 100uF 35V 10%	3
69	006-1024304109R	Capacitor	1000UF/200V 105℃Φ30*41mm 20% ECOSZDA102DA	2
70	006-1004151163R	Capacitor	10uF/50V 5*11distance=2MM SK105℃	2
71	006-1004061194R	Capacitor	10u/100V	1
72	006-4714081133AR	Capacitor	470U/16V ±20% Φ8*11.5MM Lelon85℃	1
73	006-4714122063R	Capacitor	470U/50V	2
74	006-4700051251R	Capacitor	47uF 35V 105℃ Φ5.1*11.5	2
75	056-0102224400R	Socket	JS3962-2P-WAFER	2
76	056-4106220000R	Socket	Connect DJ2810-06	1
77	056-0103003300R	Socket	2PIN 3.96PH(Match KAM-15-5)	1
78	056-4104221100R	Socket	DJ2802-4P	1
79	056-4102220000R	Socket	connect JS-1001-02	1
80	067-2201620000R	Diode	F16C20C mospec TO-220	2
81	022-3040041396R	Transformer	EC40 Output±39V ±15V	1
82	017-1275000000R	IC	TOP261YN PI TO-220-7C	1
83	067-2200107000R	Diode	HER107 JAL	3

R/N	P/N	PART NAME	DESCRIPTION	QTY
84	067-1100208015R	Diode	HER308	1
85	067-2200207000R	Diode	HER204	2
86	026-2205000200R	Inductance	22U ±20% 17*20MM	2
87	034-1001501110R	Rectifier	KBL410	1
88	018-9807809111R	IC	L7809CV TO-220 ST	1
89	017-1830000000R	IC	KIA7915 TO-220 KEC	1
90	017-0190000000R	IC	NJM7815FA TO-220F(JRC)	1
91	004-4448010000R	NTC Resistor	NTC 5R Φ13MM (5D-13)	1
92	004-1113010400R	Resistor	TVR-07471-D 400V	1
93	082-0100000000R	Photocoupler	PC-17K1 KODENSHI	1
94	306-1102000002R	Heatsink	Big	2
95	306-1649010002R	Heatsink	76*35*6mm,AL	1
96	035-0010029053R	Inductance	Inner DiameterΦ1.6 Outter Diameter Φ4	12
97	537-3001080801AR	Screw	M3*8	2
98	537-3001140801AR	Screw	M3*12	1
99	500-3050240800AR	Nut	M3	1
100	517-3000000300AR	Washer	M3 Zn	1
101	513-3006080300AR	Washer	Φ3.2*Φ7*0.6 Zn	1
102	537-3001080601AR	Screw	MP(+)3*8 Ni D	2

1	088-1472415000R	LED Board PCBA	LED Board PCBA	1

1	088-1730011301R	PCBA	Prefix Board Assembly	1
2	088-1730011300R	PCBA(SMT)	Prefix Board Assembly(SMT)	1
3	053-1730010013R	PCB	Prefix Board	1
4	002-1000032010R	Resistor	10Ω 1/8W 1% 0805	1
5	002-1001022010R	Resistor	0805(QUAD)100R 1/8W 5%	2
6	002-1002032010R	Resistor	1K 1/8W 1% 0805	2
7	002-1003032010QR	Resistor	10KΩ 1/8W 1% 0805	16
8	002-1004032010R	Resistor	100KΩ 1/8W 1% 0805	8
9	002-1005032010R	Resistor	1MΩ 1/8W 1% 0805	1
10	002-1202032010R	Resistor	1.2K 1/8W 1% 0805	1
11	002-1203032010R	Resistor	12K 1/8W 1% 0805	1
11	002-1500032010R	Resistor	0805150R 1/8W 1%	1
12	002-1502032010R	Resistor	08051.5K 1/8W 1%	1
13	002-1503032010R	Resistor	15K 1/8W 1% 0805	2
14	002-2003032010R	Resistor	20KΩ 1/8W 1% 0805	1
15	002-2202032010R	Resistor	2.2K 1/8W 1% 0805	2
16	002-2204032050R	Resistor	220K 0805 ±5% 1/8W	1
17	002-3302032010R	Resistor	3.3K 1/8W 1% 0805	1
18	002-4700032010R	Resistor	47Ω 1/8W 1% 0805	2

R/N	P/N	PART NAME	DESCRIPTION	QTY
19	002-5102032010R	Resistor	5.1KΩ 1/8W 1% 0805	13
20	002-5602032010R	Resistor	5.6KΩ 1/8W 1% 0805	9
21	002-7502032010R	Resistor	7.5KΩ 1/8W 1% 0805	6
22	067-7700099112R	Diode	BAV99 DUAL SOT-23 Philips/nxp	3
23	007-1000062160R	Capacitor	1NF?% 50V 0805 NPO	2
24	007-1001062060R	Capacitor	100PF CP50V 10% 0805	2
25	007-1001002060R	Capacitor	100nF CP50V 10% 0805	16
26	007-1800062090R	Capacitor	18PF/100V 0805 10%	1
27	007-2201062060R	Capacitor	220PF CP50V 10% 0805	19
28	007-3303062060R	Capacitor	0.033UF/50V 0805 20%	1
29	007-8201052060QR	Capacitor	820P/50V 5% 0805	1
30	017-5270000001R	IC	4558,NJM4580	7
31	018-2905551227R	Transistor	NPN,2N5551	1
32	027-1090622000R	Inductance	0.1 OHM 600MA 0805	6
33	057-1000422201R	Plug	10PIN2.0MM	2
34	006-1014051133HR	Electrolytic Capacitor	100UF/16V 20% 85℃5*11MM	1
35	006-1014081163-1R	Electrolytic Capacitor	100UF,50V nichicon VR 20% 85℃ 8*11.5，PH=3.5 UVR1H101MPD	2
36	006-2204151163R	Electrolytic Capacitor	22uF/50V 5*11 2MM SK	17
37	019-0311122001R	Red LED	LED 204HD/E-A Red	1
38	019-0322122001R	Green LED	LED 204GD/E-A green	1
39	020-1032120325R	Potentiometer	VR-126,A10K	2
40	020-5052119425R	Potentiometer	VR-126,B50K	2
41	040-1400000000R	Switch	JPS2281EA	3
42	089-0500000012R	Switch	SS-22F20-G12	1
43	048-3000000000R	Audio Socket	NYS143 J3Y1 3pin	1
44	049-2507222016R	7PIN XLR	NEUTRIC,7PIN XLR	2
45	051-7900000000R	RCA Socket	RCA Height=28mm	1
46	056-4203001050R	3P Socket	PH=2.54 3P	1
47	057-2540512091R	Plug	9PIN Ph=2.54mm	0.33
48	044-6560000000R	Plug	5mm	1
49	056-4102220000R	Socket	13.5mm	1
50	221-1472410000R	LED Pillar	M5*22.5mm White	2
51	055-1304007228R	Flat Cable	L=65MM PH=2.5MM28#	1
52	055-0206010133R	Flat Cable	6P	1

1	088-1730012901R	DSP PCBA	DSP Board Assembly	1
2	088-1730012900R	DSP PCBA(SMT)	DSP Board Assembly(SMT)	1
3	053-1730010029R	DSP PCB	DSP PCB	1
4	002-0000032100R	Resistor	0805 OR 1/8W 1%	3
5	002-1500032010R	Resistor	0805 150R 1/8W 1%	1
6	002-1803032010R	Resistor	18K 1/8W 0805 1%	1
7	002-2202032010R	Resistor	2.2K 1/8W 1% 0805	5

R/N	P/N	PART NAME	DESCRIPTION	QTY
8	002-2491022010R	Resistor	0805 249Ω 1/10W F	1
9	002-4702032010R	Resistor	4.7K 1/8W 1% 0805	1
10	002-4750031010R	Resistor	475R 0603 50V 1%	2
11	002-5602032010R	Resistor	5.6KΩ 1/8W 1% 0805	4
12	002-7502032010R	Resistor	7.5KΩ 1/8W 1% 0805	2
13	002-1004032010R	Resistor	100KΩ 1/8W 1% 0805	1
14	006-1000040530R	E-cap	10UF/16V 4*5.5MM K	6
15	007-1107079030R	E-cap	100uF/16V，6.3*5.5 ±20%	1
16	007-1001002060R	Capacitor	100nF 50V 5% 0805	14
17	007-2000052060R	Capacitor	20PF 50V 5% 0805	2
18	007-3302062060R	Capacitor	3.3NF/50V 0805 10%	1
19	007-6801052060QR	Capacitor	0805(QUAD)680P 5% 50V	2
20	007-6803062063R	Capacitor	68NF 50V 10% COG 0805 ROHS	1
21	017-1295000000R	IC	LM1117MPX-ADJ SOT-223 N03B NS	1
22	018-2905551227R	Transistor	2N5551S SOT-23 KEC	1
23	018-6505401227R	Transistor	MMBT5401LT1G.SOT-23.ON	1
24	027-1090622000R	Inductance	0.1 OHM 600MA 0805	3
25	017-1431000000R	Eeprom	AT24C256C Titan12D	1
26	017-1406000000R	IC	ADAU1701,48_Lead LQPF ANALOG DEVICES	1
27	017-1408000000R	IC	MAX809STRGIC SOT ON Semiconductor	1
28	059-1228802111R	Crystal	12.288MHZ-20pf-20PPM	1
29	056-2120001184R	Socket	10*2.0mm	2

1	742-0501000000R	Heat Shrinkable Tube	Φ5mm L=20mm	0.14
2	742-0601000000R	Heat Shrinkable Tube	Φ6mm L=250mm	0.25
3	742-2500000000R	Heat Shrinkable Tube	Φ25mm L1=40mm L2=20mm L3=30mm gray	0.09
4	742-3501000000R	Heat Shrinkable Tube	Φ35mm L=50mm black	0.05
5	042-1003005000R	Mains Switch	RL3-421-G-2 BK/BK-P8	1
6	044-2600000000R	Mains Inlet	RF-2004	1
7	031-2200507121HR	Fuse	TSD 2A/250V	1
8	060-0180151004R	Grounding Wire	Yellow-green wire with terminalL=180mm	1
9	060-0180120100R	Wire	1617#18brown L=120MM	1
10	060-0180120300R	Wire	1617#18blue L=120MM	1
11	055-0402030333R	Wire	1617#18black-white L=300MM	1
12	055-0302010133R	Wire	2PIN 24AWG UL1007 L=100mm	1
13	071-1100000000R	Bundle Wire	YJ-100mm	4
14	263-0500090062R	Black EVA	500*9 T=6mm	0.03

R/N	COUNTRY	UNIT CODE	P/N	PART NAME	DESCRIPTION	QTY	COLOR
1	CHA	WP-073001-01A	602-05330000101R	Power Cord	China specification 3*0.75MM2，L=3M	1	Black
		WP-073068-01A	L01-07020125A	Active Power Amplifier	Titan 12D Wharfedale FG 230V	1	White
2	USA	WP-073001-02A	602-01330000101R	Power Cord	USA specification，3*0.75MM2，L=3M	1	Black
		WP-073068-02A	L01-07020126A	Active Power Amplifier	Titan 12D Wharfedale FG 120V	1	White
3	UK	WP-073001-03A	602-03330000101R	Power Cord	UK specification3*0.75MM2，L=3M	1	Black
		WP-073068-03A	L01-07020125A	Active Power Amplifier	Titan 12D Wharfedale FG 230V	1	White
4	AUS	WP-073001-05A	602-06330000101R	Power Cord	Australia specification，3*0.75MM2，L=3M	1	Black
		WP-073068-05A	L01-07020125A	Active Power Amplifier	Titan 12D Wharfedale FG 230V	1	White
5	FG	WP-073001-07A	602-03330000101R	Power Cord	FG specification，3*0.75MM2，L=3M	1	Black
		WP-073068-07A	L01-07020125A	Active Power Amplifier	Titan 12D Wharfedale FG 230V	1	White
6	JAP	WP-073001-12A	062-04330000500R	Power Cord	Japan specification，3*0.75MM2，L=3M	1	Black
		WP-073068-12A	L01-07020126A	Active Power Amplifier	Titan 12D Wharfedale FG 120V	1	White
7	SA	WP-073001-14A	602-08330000100R	Power Cord	South Africa specification 3X0.75MM2 L=3M	1	Black
		WP-073068-14A	L01-07020125A	Active Power Amplifier	Titan 12D Wharfedale FG 230V	1	White

R/N	COUNTRY	UNIT CODE	P/N	PART NAME	DESCRIPTION	QTY
1	FG	L01-07020125A	031-2200507121HR	FUSE	TSD 2A/250V 5*20MM	1
			088-1730010401R	Power Amplifier Board	Titian 12D amplifier&power supply PCBA(220-240V)	1
2	USA	L01-07020126A	031-2200512121R	FUSE	FUSET4A 250V 5*20MM	1
			088-1730014500R	Power Amplifier Board	Titian 12D amplifier&power supply PCBA(100-120V)	1

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